## SEQUENCE LISTING

<110> Field, Loren J. Tsai, Shih-Chong <120> P193 PROTEINS AND NUCLEIC ACIDS, AND USES THEREOF <130> IU99-PCT <140> Not Yet Known <141> 2000-08-23 <150> 60/150,266 TECH CENTER 1600/2900 <151> 1999-08-23 <160> 4 <170> PatentIn Ver. 2.1 <210> 1 <211> 5217 <212> DNA <213> Mus musculus <220> <221> CDS <222> (62)..(5128) <400> 1 ttcctagctc tgcaaaggac aggcctcgcg caggatcccg gcggacttct gaggtgccac 60 g atg gta ggg gag cta cga tac agg gaa ttc agg gtg ccc ctg qqq cct 109 Met Val Gly Glu Leu Arg Tyr Arg Glu Phe Arg Val Pro Leu Gly Pro

ggc ttg cac gcg tat ccg gat gaa ttg atc cgc caa cgg gtt ggc cat Gly Leu His Ala Tyr Pro Asp Glu Leu Ile Arg Gln Arg Val Gly His

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aat ggg cac ccc gag tat cag atc cgc tgg ctc atc ctc agg cgc ggg 205 Asn Gly His Pro Glu Tyr Gln Ile Arg Trp Leu Ile Leu Arg Arg Gly 40

gat gat ggg gac cgg gac tct aca gtg gac tgc aag gct gag cat atc 253 Asp Asp Gly Asp Arg Asp Ser Thr Val Asp Cys Lys Ala Glu His Ile 55 60

ctg tta tgg atg tct gac gat gag atc tat gcc aac tgc cac aag atg 301 Leu Leu Trp Met Ser Asp Asp Glu Ile Tyr Ala Asn Cys His Lys Met

ctg ggc gag aat ggc caa gtc atc gca cct tcc cgg gag tcc act gag 349 Leu Gly Glu Asn Gly Gln Val Ile Ala Pro Ser Arg Glu Ser Thr Glu 85 90

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acc gtg cct cct gcc cct ctc ctt cac acg gtc cat gta ctc agt gcc Thr Val Pro Pro Ala Pro Leu Leu His Thr Val His Val Leu Ser Ala 130

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tct 1069		tcc	tcc	acc	ttc	cag	cct	cgg	cca	gca	cag	ttc	cgc	ccc	tac	
Ser	Ser	Ser	Ser	Thr 325	Phe	Gln	Pro	Arg	Pro 330	Ala	Gln	Phe	Arg	Pro 335	Tyr	
acc 1117		cgt	ttc	agg	agg	tcg	agg	cgg	ttt	cgc	ccc	cgt	gcc	tcg	ttt	
Thr	Gln	Arg	Phe 340	Arg	Arg	Ser	Arg	Arg 345	Phe	Arg	Pro	Arg	Ala 350	Ser	Phe	
gcc 1165		ttt	aat	acc	tat	gcc	ttg	tat	gtg	cgg	gac	acg	ctg	cgg	ccc	
		Phe 355	Asn	Thr	Tyr	Ala	Leu 360	Tyr	Val	Arg	Asp	Thr 365	Leu	Arg	Pro	
ggg 1213		cgg	gta	cgg	atg	ctg	gag	aat	tac	gag	gag	atc	gct	gct	ggg	
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1885 Leu Gln Ser Ala Ser Pro Ala Leu Gln Arg Leu Val Glu Ser Leu Gly 600 595 ccc gaa ggg gag gtc ctt gtg gaa ctg gaa caa gcc ctc ggc tcc gag Pro Glu Gly Glu Val Leu Val Glu Leu Glu Gln Ala Leu Gly Ser Glu gct ccc cag gaa act gag gtc aag tcc tgc ttg ttg cag ctc cag gag 1981 Ala Pro Gln Glu Thr Glu Val Lys Ser Cys Leu Leu Gln Leu Gln Glu cag ccc cag ccc ttc ctc gct ctg atg cgg agc ctg gac act tcc gcc 2029 Gln Pro Gln Pro Phe Leu Ala Leu Met Arg Ser Leu Asp Thr Ser Ala 645 650 age aac aag acc etg cac etc act gtg etc aga atc tta atg cag etg 2077 Ser Asn Lys Thr Leu His Leu Thr Val Leu Arg Ile Leu Met Gln Leu 660 gtg aac ttc cca gag gcg ctg ttg cta ccc tgg cac gag gcc atg gat 2125 Val Asn Phe Pro Glu Ala Leu Leu Leu Pro Trp His Glu Ala Met Asp gee tge gtg ace tge ett egg tee eec aat act gae ega gag gtg ete 2173 Ala Cys Val Thr Cys Leu Arg Ser Pro Asn Thr Asp Arg Glu Val Leu 700 690 695 cag gaa cta atc ttt ttc ctg cac cgc ctg acc aca agc cgg gac 2221 Gln Glu Leu Ile Phe Phe Leu His Arg Leu Thr Thr Thr Ser Arg Asp tat gcg gtg ata cta aac cag cat gga gcc cgg gac gcc atc tcc aaa 2269 Tyr Ala Val Ile Leu Asn Gln His Gly Ala Arg Asp Ala Ile Ser Lys gtc ctg gaa aag cac cga ggg aaa ctg gag ttg gct cag gag ctg cgg 2317 Val Leu Glu Lys His Arg Gly Lys Leu Glu Leu Ala Gln Glu Leu Arg 740 745 gat atg gtg tcc aag tgt gag aag cat gcc cac ctc tac cgg aaa ctc Asp Met Val Ser Lys Cys Glu Lys His Ala His Leu Tyr Arg Lys Leu acc acc aac atc ctg ggc ggt tgc atc cag atg gtc ctg ggt cag att 2413 Thr Thr Asn Ile Leu Gly Gly Cys Ile Gln Met Val Leu Gly Gln Ile 775 gaa gac cac aga cga acc cac cgg ccc atc caa atc cca ttc ttt gat 2461 Glu Asp His Arg Arg Thr His Arg Pro Ile Gln Ile Pro Phe Phe Asp 785 790 795 800 gtq ttt ctc aga tat ctg tgc cag ggc tcc agt gag gaa atg aag aaa 2509

Val Phe Leu Arg Tyr Leu Cys Gln Gly Ser Ser Glu Glu Met Lys Lys 805 810 aac agg tac tgg gag aag gtg gag gtg tcc tcc aac cca cag cgg gcc 2557 Asn Arg Tyr Trp Glu Lys Val Glu Val Ser Ser Asn Pro Gln Arg Ala 820 825 age agg etg acg gac ege aac eee aag ace tae tgg gag tee agt gge Ser Arg Leu Thr Asp Arg Asn Pro Lys Thr Tyr Trp Glu Ser Ser Gly agg gcc ggc tcc cac ttc atc acc tta cac atg cgc cca ggt gtc atc 2653 Arg Ala Gly Ser His Phe Ile Thr Leu His Met Arg Pro Gly Val Ile ate agg cag ctg act cta ctg gtg gct ggc gag gac tca agc tac atg Ile Arg Gln Leu Thr Leu Leu Val Ala Gly Glu Asp Ser Ser Tyr Met cca gcc tgg gtg gtg gta tgc ggg ggc aac agc atc aag tcc gtt aat Pro Ala Trp Val Val Cys Gly Gly Asn Ser Ile Lys Ser Val Asn aaa gaa ctc aac acg gta aac gtg atg ccc tct gcc agc cgg gtg acc 2797 Lys Glu Leu Asn Thr Val Asn Val Met Pro Ser Ala Ser Arg Val Thr ctc ctg gag aac ctg acc cgc ttc tgg ccc atc atc caa atc aga ata 2845 Leu Leu Glu Asn Leu Thr Arg Phe Trp Pro Ile Ile Gln Ile Arg Ile 915 920 aag ege tge eag eag ggt gge att aac aeg ege ate egg gge eta gag Lys Arg Cys Gln Gln Gly Gly Ile Asn Thr Arg Ile Arg Gly Leu Glu gtg ctg ggc ccc aag ccc acc ttc tgg cca gtg ttc cga gag caa ctg 2941 Val Leu Gly Pro Lys Pro Thr Phe Trp Pro Val Phe Arg Glu Gln Leu tgc cgg cac acg cgc ctc ttc tac atg gtt cgg gcc cag gca tgg agt Cys Arg His Thr Arg Leu Phe Tyr Met Val Arg Ala Gln Ala Trp Ser 965 970 cag gac ata gca gag gac cgc cgg agc ctt ctg cac ctg agt tct agg Gln Asp Ile Ala Glu Asp Arg Arg Ser Leu Leu His Leu Ser Ser Arg cta aat ggg get etg ege eat gaa eag aat tit gea gag ege tie ett 3085 Leu Asn Gly Ala Leu Arg His Glu Gln Asn Phe Ala Glu Arg Phe Leu cct gat atg gag gcc gcc caa gca ctg agc aag acc tgc tgg gag gcg 3133 Pro Asp Met Glu Ala Ala Gln Ala Leu Ser Lys Thr Cys Trp Glu Ala

1010 1015 1020

ctg gtc agc ccc ctg gtg cag aac att aca tct ccc gat gag gac agc 3181

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acc agc tcc ttg ggc tgg ctg ctg gat cag tac ttg gga tgc agg gag 3229

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1045 1050 1055

get get tac aat eee cag age agg get get get t<br/>te tee tee egg g<br/>tt 3277

Ala Ala Tyr Asn Pro Gln Ser Arg Ala Ala Ala Phe Ser Ser Arg Val 1060 1065 1070

 $\mbox{cgc}$  cgc ctt acc cac ctc ctg gtc cat gtg gag ccc cgt gag gca gca 3325

Arg Arg Leu Thr His Leu Leu Val His Val Glu Pro Arg Glu Ala Ala 1075 1080 1085

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Pro Pro Val Val Ala Ile Pro Arg Ser Lys Gly Arg Asn Arg Ile His 1090 1095 1100

gac tgg agc tac ttg atc acc cgg ggc ctt cca agt agc atc atg aag 3421

Asp Trp Ser Tyr Leu Ile Thr Arg Gly Leu Pro Ser Ser Ile Met Lys 1105 1110 1115 1120

aac ctg acc cgc tgt tgg cgg tct gtg gtg gag gag cag atg aac aag 3469

Asn Leu Thr Arg Cys Trp Arg Ser Val Val Glu Glu Gln Met Asn Lys 1125 1130 1135

ttt ctc agt gcg tcc tgg aaa gac gat gat ttc gta ccc cgc tat tgc 3517

Phe Leu Ser Ala Ser Trp Lys Asp Asp Asp Phe Val Pro Arg Tyr Cys 1140 1145 1150

gag ege tat tae gte etg eag aag tee age tea gag etg t<br/>tt ggg eea  $3565\,$ 

Glu Arg Tyr Tyr Val Leu Gln Lys Ser Ser Glu Leu Phe Gly Pro 1155 1160 1165

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Arg Arg Leu Pro Phe Leu Arg Ala Ala His Val Lys Gln Gln Phe Ala 1185 1190 1195 1200

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Gly Met Glu Met Leu Ala Gln Leu Gln Arg Cys Leu Glu Ser Val Leu 1220 1225 1230 att t<br/>tc tct ccc ctg gag ata gcc acc <br/>tct tgag cat tac tac cag 3805

Ile Phe Ser Pro Leu Glu Ile Ala Thr Thr Phe Glu His Tyr Tyr Gln 1235 1240 1245

cac tac atg gct gac cgt ctc ctg agc gta ggc tcc agc tgg ctg gag 3853

His Tyr Met Ala Asp Arg Leu Leu Ser Val Gly Ser Ser Trp Leu Glu 1250 1260

ggg gcc gta ctg gag cag atc ggt ccc tgc ttc ccc agc cgt ctt ccc 3901

Gly Ala Val Leu Glu Gln Ile Gly Pro Cys Phe Pro Ser Arg Leu Pro 1265 1270 1275 1280

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Gln Gln Met Leu Gln Ser Leu Asn Val Ser Glu Glu Leu Gln Arg Gln 1285 1290 1295

ttc cac gtt tac cag ctg cag ctt gat cag gag ctc ctg aag ctg 3997

Phe His Val Tyr Gln Leu Gln Gln Leu Asp Gln Glu Leu Leu Lys Leu 1300 1305 1310

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Glu Asp Thr Glu Lys Lys Ile Gln Val Ala His Glu Asp Ser Gly Arg 1315 1320 1325

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Glu Asp Lys Ser Lys Lys Glu Glu Ala Ile Gly Glu Ala Ala Ala Val 1330 1335 1340

gct atg gca gag gag gat caa ggg aag aag gag gag gag gag gag 4141

Ala Met Ala Glu Glu Glu Asp Gln Gly Lys Lys Glu Glu Glu Glu 1345 1350 1355 1360

gaa ggg gag gga gag gat gag gag gaa gag cgc tat tat aaa gga aca 4189

Glu Gly Glu Gly Glu Asp Glu Glu Glu Glu Arg Tyr Tyr Lys Gly Thr 1365 1370 1375

atg cca gaa gtg tgt gta ctt gtc gtg acg cca cgc ttc tgg cct gtc 4237

Met Pro Glu Val Cys Val Leu Val Val Thr Pro Arg Phe Trp Pro Val 1380 1385 1390

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Ala Ser Val Cys Gln Met Leu Asn Pro Ala Thr Cys Leu Pro Ala Tyr 1395 1400 1405

ctg cgg ggg acc ata aac cac tac acc aac ttt tac agc aag agt cag 4333

Leu Arg Gly Thr Ile Asn His Tyr Thr Asn Phe Tyr Ser Lys Ser Gln 1410 1415 1420

age ege tee age tta gag aaa gag eea eag agg egg etg eag teg ace 4381

Ser Arg Ser Ser Leu Glu Lys Glu Pro Gln Arg Arg Leu Gln Trp Thr 1425 1430 1435 1440

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- Trp Gln Gly Arg Ala Glu Val Gln Phe Gly Gly Gln Ile Leu His Val 1445 1450 1455
- tcc aca gta cag atg tgg ctg ctg ctg cat ctc aac aac caa aag gag 4477
- Ser Thr Val Gln Met Trp Leu Leu His Leu Asn Asn Gln Lys Glu 1460 1465 1470
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- Val Ser Val Glu Ser Leu Gln Ala Ile Ser Glu Leu Pro Pro Asp Val 1475 1480 1485
- ctt cac agg gcc atc ggg cct ctc acc tca tca aga ggt ccc ttg gac 4573
- Leu His Arg Ala Ile Gly Pro Leu Thr Ser Ser Arg Gly Pro Leu Asp 1490 1495 1500
- ctg cag gag cag aag aac gta cca gga ggg gtg ctc aag att cga gat 4621
- Leu Gln Glu Gln Lys Asn Val Pro Gly Gly Val Leu Lys Ile Arg Asp 1505 1510 1515 1520
- gac agt gag gaa ccc agg ccg agg ggc aac gtg tgg ctg atc cca 4669
- Asp Ser Glu Glu Pro Arg Pro Arg Gly Asn Val Trp Leu Ile Pro
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- cct cag aca tac cta caa gct gag gcc gaa gag ggc cgg aac atg gag 4717
- Pro Gln Thr Tyr Leu Gln Ala Glu Ala Glu Glu Gly Arg Asn Met Glu
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- Lys Arg Arg Asn Leu Leu Asn Cys Leu Val Val Arg Ile Leu Lys Ala 1555 1560 1565
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- His Gly Asp Glu Gly Leu His Val Asp Arg Leu Val Tyr Leu Val Leu
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- gaa gcg tgg gag aaa ggc ccg tgt cct gct agg ggt ctg gtc agc agc 4861
- Glu Ala Trp Glu Lys Gly Pro Cys Pro Ala Arg Gly Leu Val Ser Ser 1585 1590 1595 1600
- ctc ggc agg gga gca acc tgc agg agc tct gat gtc ctc tcc tgc atc 4909
- Leu Gly Arg Gly Ala Thr Cys Arg Ser Ser Asp Val Leu Ser Cys Ile 1605 1610 1615
- ctg cac ctc ctg gtc aag ggc acg ctg aga cgc cat gac gac cgg ccg 4957
- Leu His Leu Leu Val Lys Gly Thr Leu Arg Arg His Asp Asp Arg Pro 1620 1625 1630
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5053

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1685

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Asp Asp Gly Asp Arg Asp Ser Thr Val Asp Cys Lys Ala Glu His Ile
50 55 60

Leu Leu Trp Met Ser Asp Asp Glu Ile Tyr Ala Asn Cys His Lys Met 65 70 75 80

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Ala Gly Ala Leu Asp Lys Ser Val Leu Gly Glu Met Glu Thr Asp Val
100 105 110

Lys Ser Leu Ile Gln Arg Ala Leu Arg Gln Leu Glu Glu Cys Val Gly
115 120 125

Thr Val Pro Pro Ala Pro Leu Leu His Thr Val His Val Leu Ser Ala 130 135 140

Tyr Ala Ser Ile Glu Pro Leu Thr Gly Ile Phe Lys Asp Arg Arg Val 145 150 155 160

Val Asn Leu Leu Met His Met Leu Ser Ser Pro Asp Tyr Gln Ile Arg 165 170 175

Trp Ser Ala Gly Arg Met Ile Gln Ala Leu Ser Ser His Asp Ala Gly
180 185 190

Thr Arg Thr Gln Ile Leu Leu Ser Leu Ser Gln Gln Glu Ala Ile Glu 195 200 205

Lys His Leu Asp Phe Asp Ser Arg Cys Ala Leu Leu Ala Leu Phe Ala Gln Ala Thr Leu Thr Glu His Pro Met Ser Phe Glu Gly Val Gln Leu Pro Gln Val Pro Gly Arg Leu Leu Phe Ser Leu Val Lys Arg Tyr Leu 250 His Val Thr Phe Leu Leu Asp Arg Leu Asn Gly Asp Ala Gly Asp Gln Gly Ala Gln Asn Asn Phe Ser Pro Glu Glu Leu Asn Val Gly Arg Gly Arg Leu Glu Leu Glu Phe Ser Met Ala Met Gly Thr Leu Ile Ser Glu 295 300 Leu Val Gln Ala Met Arg Trp Asp Gly Ala Ser Ser Arg Pro Glu Ser Ser Ser Ser Ser Thr Phe Gln Pro Arg Pro Ala Gln Phe Arg Pro Tyr 330 Thr Gln Arg Phe Arg Arg Ser Arg Arg Phe Arg Pro Arg Ala Ser Phe 345 Ala Ser Phe Asn Thr Tyr Ala Leu Tyr Val Arg Asp Thr Leu Arg Pro Gly Met Arg Val Arg Met Leu Glu Asn Tyr Glu Glu Ile Ala Ala Gly Asp Glu Gly Gln Phe Arg Gln Ser Asn Asp Gly Val Pro Pro Ala Gln Val Leu Trp Asp Ser Thr Gly His Thr Tyr Trp Val His Trp His Met Leu Glu Ile Leu Gly Phe Glu Glu Asp Ile Glu Asp Val Ile Asp Ile 420 Glu Glu Leu Gln Glu Leu Gly Ala Asn Gly Ala Leu Ser Ile Val Pro Pro Ser Gln Arg Trp Lys Pro Ile Thr Gln Leu Phe Ala Glu Pro Tyr Val Val Pro Glu Glu Glu Asp Arg Glu Glu Ser Glu Asn Leu Thr Gln Ala Glu Trp Trp Glu Leu Leu Phe Phe Ile Arg Gln Leu Ser Glu Ala 490 Glu Arg Leu His Ile Val Asp Leu Leu Gln Asp His Leu Glu Glu Glu 500 505 Arg Val Leu Asp Tyr Asp Met Leu Pro Glu Leu Thr Val Pro Val Asp 520 Leu Ala Gln Asp Leu Leu Ser Leu Pro Gln Gln Leu Glu Asp Ser 535 Ala Leu Arg Asp Leu Phe Ser Cys Ser Val Tyr Arg Lys Tyr Gly Pro 550 555

Glu Val Leu Val Gly His Leu Ser Tyr Pro Phe Val Pro Gly Ala Gln Pro Asn Leu Phe Gly Ala Asn Glu Glu Ser Glu Ala Lys Asp Pro Pro 585 Leu Gln Ser Ala Ser Pro Ala Leu Gln Arg Leu Val Glu Ser Leu Gly 600 Pro Glu Gly Glu Val Leu Val Glu Leu Glu Gln Ala Leu Gly Ser Glu Ala Pro Gln Glu Thr Glu Val Lys Ser Cys Leu Leu Gln Leu Gln Glu 635 Gln Pro Gln Pro Phe Leu Ala Leu Met Arg Ser Leu Asp Thr Ser Ala 645 650 Ser Asn Lys Thr Leu His Leu Thr Val Leu Arg Ile Leu Met Gln Leu Val Asn Phe Pro Glu Ala Leu Leu Leu Pro Trp His Glu Ala Met Asp 680 Ala Cys Val Thr Cys Leu Arg Ser Pro Asn Thr Asp Arg Glu Val Leu 695 Gln Glu Leu Ile Phe Phe Leu His Arg Leu Thr Thr Thr Ser Arg Asp Tyr Ala Val Ile Leu Asn Gln His Gly Ala Arg Asp Ala Ile Ser Lys 730 Val Leu Glu Lys His Arg Gly Lys Leu Glu Leu Ala Gln Glu Leu Arg Asp Met Val Ser Lys Cys Glu Lys His Ala His Leu Tyr Arg Lys Leu Thr Thr Asn Ile Leu Gly Gly Cys Ile Gln Met Val Leu Gly Gln Ile Glu Asp His Arg Arg Thr His Arg Pro Ile Gln Ile Pro Phe Phe Asp Val Phe Leu Arg Tyr Leu Cys Gln Gly Ser Ser Glu Glu Met Lys Lys Asn Arg Tyr Trp Glu Lys Val Glu Val Ser Ser Asn Pro Gln Arg Ala 820 825 Ser Arg Leu Thr Asp Arg Asn Pro Lys Thr Tyr Trp Glu Ser Ser Gly 840 Arg Ala Gly Ser His Phe Ile Thr Leu His Met Arg Pro Gly Val Ile Ile Arg Gln Leu Thr Leu Leu Val Ala Gly Glu Asp Ser Ser Tyr Met 870 875 Pro Ala Trp Val Val Cys Gly Gly Asn Ser Ile Lys Ser Val Asn Lys Glu Leu Asn Thr Val Asn Val Met Pro Ser Ala Ser Arg Val Thr 900 905

- Leu Leu Glu Asn Leu Thr Arg Phe Trp Pro Ile Ile Gln Ile Arg Ile 915 920 925
- Lys Arg Cys Gln Gln Gly Gly Ile Asn Thr Arg Ile Arg Gly Leu Glu 930 935 940
- Val Leu Gly Pro Lys Pro Thr Phe Trp Pro Val Phe Arg Glu Gln Leu 945 950 955 960
- Cys Arg His Thr Arg Leu Phe Tyr Met Val Arg Ala Gln Ala Trp Ser 965 970 975
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- Leu Asn Gly Ala Leu Arg His Glu Gln Asn Phe Ala Glu Arg Phe Leu 995 1000 1005
- Pro Asp Met Glu Ala Ala Gln Ala Leu Ser Lys Thr Cys Trp Glu Ala 1010 1015 1020
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- Thr Ser Ser Leu Gly Trp Leu Leu Asp Gln Tyr Leu Gly Cys Arg Glu
  1045 1050 1055
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- Arg Arg Leu Thr His Leu Leu Val His Val Glu Pro Arg Glu Ala Ala 1075 1080 1085
- Pro Pro Val Val Ala Ile Pro Arg Ser Lys Gly Arg Asn Arg Ile His 1090 1095 1100
- Asp Trp Ser Tyr Leu Ile Thr Arg Gly Leu Pro Ser Ser Ile Met Lys 1105 1110 1115 1120
- Asn Leu Thr Arg Cys Trp Arg Ser Val Val Glu Glu Gln Met Asn Lys 1125 1130 1135
- Phe Leu Ser Ala Ser Trp Lys Asp Asp Phe Val Pro Arg Tyr Cys
  1140 1145 1150
- Glu Arg Tyr Tyr Val Leu Gln Lys Ser Ser Glu Leu Phe Gly Pro 1155 1160 1165
- Arg Ala Ala Phe Leu Leu Ala Met Arg Asn Gly Cys Ala Asp Ala Val 1170 1175 1180
- Arg Arg Leu Pro Phe Leu Arg Ala Ala His Val Lys Gln Gln Phe Ala 1185 1190 1195 1200
- Arg His Ile Asp Gln Arg Ile Gln Gly Ser Arg Met Gly Gly Ala Arg 1205 1210 1215
- Gly Met Glu Met Leu Ala Gln Leu Gln Arg Cys Leu Glu Ser Val Leu 1220 1225 1230
- Ile Phe Ser Pro Leu Glu Ile Ala Thr Thr Phe Glu His Tyr Tyr Gln 1235 1240 1245
- His Tyr Met Ala Asp Arg Leu Leu Ser Val Gly Ser Ser Trp Leu Glu 1250 1255 1260

- Gly Ala Val Leu Glu Gln Ile Gly Pro Cys Phe Pro Ser Arg Leu Pro 1265 1270 1275 1280
- Gln Gln Met Leu Gln Ser Leu Asn Val Ser Glu Glu Leu Gln Arg Gln 1285 1290 1295
- Phe His Val Tyr Gln Leu Gln Gln Leu Asp Gln Glu Leu Leu Lys Leu 1300 1305 1310
- Glu Asp Thr Glu Lys Lys Ile Gln Val Ala His Glu Asp Ser Gly Arg 1315 1320 1325
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- Ala Met Ala Glu Glu Glu Asp Gln Gly Lys Lys Glu Glu Glu Glu 1345 1350 1355 1360
- Glu Gly Glu Gly Glu Asp Glu Glu Glu Glu Arg Tyr Tyr Lys Gly Thr 1365 1370 1375
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- Leu His Arg Ala Ile Gly Pro Leu Thr Ser Ser Arg Gly Pro Leu Asp 1490 1495 1500
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545

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- get gee caa get etg gge aag ace tge tgg gag gee etg gte age eee 3233
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- ttg get acc egg gge ett eea age age ate atg aga aac etg acg ege 3521
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           965
                         970 975
Phe Arg Glu Gln Leu Cys Arg His Thr Arg Leu Phe Tyr Met Val Arg
                        985
         980
Ala Gln Ala Trp Ser Gln Asp Met Ala Glu Asp Arg Arg Ser Leu Leu
                    1000
                                    1005
His Leu Ser Ser Arg Leu Asn Gly Ala Leu Arg Gln Glu Gln Asn Phe
1010 1015 1020
Ala Asp Arg Phe Leu Pro Asp Asp Glu Ala Ala Gln Ala Leu Gly Lys
    1030 1035 1040
Thr Cys Trp Glu Ala Leu Val Ser Pro Val Val Gln Asn Ile Thr Ser
    1045 1050 1055
Pro Asp Glu Asp Gly Ile Ser Pro Leu Gly Trp Leu Leu Asp Gln Tyr
   1060 1065 1070
Leu Glu Cys Gln Glu Ala Val Phe Asn Pro Gln Ser Arg Gly Pro Ala
    1075 1080 1085
Phe Phe Ser Arg Val Arg Arg Leu Thr His Leu Leu Val His Val Glu
 1090 1095 1100
Pro Cys Glu Ala Pro Pro Pro Val Val Ala Thr Pro Arg Pro Lys Gly
              1110 1115
Arg Asn Arg Ser His Asp Trp Ser Ser Leu Ala Thr Arg Gly Leu Pro
                         1130
                                          1135
          1125
Ser Ser Ile Met Arg Asn Leu Thr Arg Cys Trp Arg Ala Val Val Glu
 1140 1145 1150
Lys Gln Val Asn Asn Phe Leu Thr Ser Ser Trp Arg Asp Asp Phe
    1155 1160 1165
Val Pro Arg Tyr Cys Glu His Phe Asn Ile Leu Gln Asn Ser Ser Ser
 1170 1175
                                1180
Glu Leu Phe Gly Pro Arg Ala Ala Phe Leu Leu Ala Leu Gln Asn Gly
                             1195
              1190
Cys Ala Gly Ala Leu Leu Lys Leu Pro Phe Leu Lys Ala Ala His Val
           1205
                          1210
                                          1215
Ser Glu Gln Phe Ala Arg His Ile Asp Gln Gln Ile Gln Gly Ser Arg
        1220
                       1225
                                      1230
Ile Gly Gly Ala Gln Glu Met Glu Arg Leu Ala Gln Leu Gln Gln Cys
          1240
                                 1245
    1235
Leu Gln Ala Val Leu Ile Phe Ser Gly Leu Glu Ile Ala Thr Thr Phe
 1250 1255 1260
Glu His Tyr Tyr Gln His Tyr Met Ala Asp Arg Leu Leu Gly Val Val 1265 1270 1275 1280
Ser Ser Trp Leu Glu Gly Ala Val Leu Glu Gln Ile Gly Pro Cys Phe
    1285 1290
                                         1295
Pro Asn Arg Leu Pro Gln Gln Met Leu Gln Ser Leu Ser Thr Ser Lys
        1300
                        1305
                                       1310
Glu Leu Gln Arg Gln Phe His Val Tyr Gln Leu Gln Gln Leu Asp Gln
    1315
                    1320
                                    1325
Glu Leu Leu Lys Leu Glu Asp Thr Glu Lys Lys Ile Gln Val Gly Leu
                 1335 1340
Gly Ala Ser Gly Lys Glu His Lys Ser Glu Lys Glu Glu Glu Ala Gly
             1350 1355
Ala Ala Ala Val Val Asp Val Ala Glu Gly Glu Glu Glu Glu Glu
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1365 1370 Asn Glu Asp Leu Tyr Tyr Glu Gly Ala Met Pro Glu Val Ser Val Leu 1385 1390 Val Leu Ser Arg His Ser Trp Pro Val Ala Ser Ile Cys His Thr Leu 1395 1400 1405 Asn Pro Arg Thr Cys Leu Pro Ser Tyr Leu Arg Gly Thr Leu Asn Arg 1415 1410 1420 Tyr Ser Asn Phe Tyr Asn Lys Ser Gln Ser His Pro Ala Leu Glu Arg 1425 1430 1435 Gly Ser Gln Arg Arg Leu Gln Trp Thr Trp Leu Gly Trp Ala Glu Leu 1450 1445 Gln Phe Gly Asn Gln Thr Leu His Val Ser Thr Val Gln Met Trp Leu 1460 1465 1470 Leu Leu Tyr Leu Asn Asp Leu Lys Ala Val Ser Val Glu Ser Leu Leu 1475 1480 1485Ala Phe Ser Gly Leu Ser Ala Asp Met Leu Asn Gln Ala Ile Gly Pro 1490 1495 1500 Leu Thr Ser Ser Arg Gly Pro Leu Asp Leu His Glu Gln Lys Asp Ile 1510 1515 Pro Gly Gly Val Leu Lys Ile Arg Asp Gly Ser Lys Glu Pro Arg Ser 1525 1530 1535 Arg Trp Asp Ile Val Arg Leu Ile Pro Pro Gln Thr Tyr Leu Gln Ala 1540 1545 1550 Glu Gly Glu Asp Gly Gln Asn Leu Glu Lys Arg Arg Asn Leu Leu Asn 1555 1560 1565 Cys Leu Ile Val Arg Ile Leu Lys Ala His Gly Asp Glu Gly Leu His 1580 1575 Ile Asp Gln Leu Val Cys Leu Val Leu Glu Ala Trp Gln Lys Gly Pro 1585 1590 1595 1600 Cys Pro Pro Arg Gly Leu Val Ser Ser Leu Gly Lys Gly Ser Ala Cys 1605 1610 1615Ser Ser Thr Asp Val Leu Ser Cys Ile Leu His Leu Leu Gly Lys Gly 1620 1625 1630 Thr Leu Arg Arg His Asp Asp Arg Pro Gln Val Leu Ser Tyr Ala Val 1635 1640 1645 Pro Val Thr Val Met Glu Pro His Thr Glu Ser Leu Asn Pro Gly Ser 1655 1660 Ser Gly Pro Asn Pro Pro Leu Thr Phe His Thr Leu Gln Ile Arg Ser 1665 1670 1675 1680 Arg Gly Val Pro Tyr Ala Ser Cys Thr Ala Thr Gln Ser Phe Ser Thr 1685 1690 Phe Arg